



## 6.0 IDENTIFICATION AND SCREENING OF REMEDIAL TECHNOLOGIES – 1190 CHURCH ROAD

Based on the revised Controlling PRG evaluation (Section 5.4), FS approaches (Section 5.5), and risk management strategy development and assessment (Section 5.6), revised RAOs (Section 5.7) were developed to ensure ongoing property stewardship in relation to institutional/engineering controls (and related inspections, monitoring, maintenance, land use confirmation, and reporting) at the 1190 Church Road property.

None of the areas warrant the development and evaluation of GRAs or remedial alternatives for protection of human health, ecological and soil-to-groundwater pathways with respect to any of the three NP7 properties. However, as a conservative measure meant solely to complete the administrative record for the NP 7 site by documenting institutional and engineering controls, as well as, address all outstanding USEPA comments, the remainder of Section 6 identifies and screens a limited range of potential remedial technologies/alternatives associated with ongoing property stewardship. Section 6 discusses the following required FS components (for ongoing property stewardship only):

- Final Remedial Action Objectives.
- Potential Remedial Technologies/Alternatives.
- Remedial technology screening results.
- Remedial alternatives for detailed analysis.
- Location- and action-specific ARARs to be considered in detailed analysis.

Section 7 documents the detailed/comparative analysis of remedial alternatives, including No Action and Institutional and/or Engineering Controls, against the required National Contingency Plan (NCP) criteria.

### 6.1 Identification of GRAs and Potential Remedial Options

Although not strictly warranted for protection of human, ecological and/or soil-to-groundwater receptors, given current mixed commercial and residential use, the only feasible GRAs/remedial technologies are:

- **No Action** – required by the NCP.
- **Existing Institutional and Engineering Controls.**
- **Revised Institutional and/or Engineering Controls.**

Containment, removal, treatment, and disposal options are either not applicable or feasible, based on the various Respondent risk management evaluations, in consideration of current and planned future Site conditions/uses.

**No Action** - The No Action alternative is required by the NCP and used to establish a baseline from which to compare other remedial alternatives. A five-year review would be performed to evaluate the



effectiveness of the remedy, the distribution of COCs, and a determination of whether Site-related contamination (i.e., COCs above Controlling PRGs) has spread beyond its current extent. If necessary, appropriate remedial actions would be considered at the time of the five-year review, to ensure the remedy remains protective of human health and the environment.

**Existing Institutional and Engineering Controls** - Existing Institutional and/or Engineering Controls, include deed restrictions to limit current/future access and Site/groundwater use at the 1190 Church Road property. Institutional/engineering controls would provide ongoing protection of human, ecological and soil-to-groundwater receptors from exposure to Site COCs. Although engineering controls physically protect against direct contact, and help reduce or eliminate the potential for a complete soil-to-groundwater pathway, institutional controls are generally not effective in precluding COC migration or reducing COC mass. Typically, deed restrictions are recorded at the county to document restrictions on future Site use.

Existing deed restrictions recorded with Montgomery County (Appendix B) for the 1190 Church Road property include the following activity and use limitations:

- Wells for groundwater use shall not be installed and groundwater shall not be used (property-wide).
- In various areas of concern, as shown on Figure 2, the following measures must be taken/maintained:
  - Vapor barriers shall be installed and maintained under all buildings.
  - Caps consisting of clean fill of at least 2 feet in depth or asphalt paving shall be installed and maintained over all areas of concern above which buildings are not constructed.
  - Soil underlying caps shall not be excavated or otherwise disturbed unless the material disburshed in appropriate characterized and managed.

**Revised Institutional and/or Engineering Controls** – The Revised Institutional and/or Engineering Controls alternative would include modifying existing deed restrictions to limit current/future access and Site/groundwater use to cover only those isolated sampling locations where COC concentrations exceed Controlling PRGs and/or are inconsistent with background (Section 5.6). Revising institutional and/or engineering controls would provide equal or greater protection of human, ecological and soil-to-groundwater receptors from exposure to Site COCs (as existing engineering/institutional controls).

## 6.2 Remedial Technology Screening Results

The remedial technology evaluation involved assessment of the above options on the basis of the following three criteria: effectiveness, implementability and relative cost. The evaluation focuses on effectiveness and de-emphasizes implementability and relative cost, all three of which are defined below:



- **Effectiveness** – effectiveness in consideration of COCs, site-specific conditions, estimated media quantity and strictly meeting Controlling PRGs during remedy construction and implementation.
- **Implementability** – technical and administrative feasibility; evaluation of pre-treatment standard requirements (not applicable for identified remedial options), management of residuals, and relative ease or difficulty in constructing/implementing the remedy and performing subsequent operation and maintenance (O&M) activities.
- **Relative Cost** – both capital and O&M costs; based on engineering judgement; classified as low, medium, or high relative to other remedial options.

The No Action alternative is required by the NCP as a baseline; it is the least effective, most implementable, and most cost-effective (i.e., low relative to other options) remedial technology/process option.

Existing Institutional and Engineering Controls is more effective than the No Action alternative and equally as effective as the Revised Institutional and/or Engineering Controls. It is less implementable than the No Action option and is high relative to the other options in terms of relative cost.

The Revised Institutional and/or Engineering Controls option is as effective and is more implementable than Existing Engineering and/or Institutional Controls. Revised Engineering and Institutional Controls are moderate in terms of cost relative to the other two remedial technologies/process options (i.e., No Action and Existing Engineering and Institutional Controls).

### 6.3 Location- and Action-Specific ARARs

Action-specific ARARs/TBCs set controls or restrictions on the design, implementation, and performance levels of activities related to the management of hazardous substances or COCs. The principal Federal, State and municipal/local action-specific ARARs/TBCs that may be applied to potential remedial alternatives for OU-1 are summarized in Table 2. Because no active remedial actions are associated with any of the remedial technologies/process options/alternatives screened and evaluated during the FS process, action-specific ARARs are not applicable.

Location-specific ARARs are restrictions placed on the concentrations of contaminants or the conduct of activities due to the site location, resources, or specific environmental features. The primary Federal, State and local, municipal location-specific ARARs/TBCs that may be applied to potential remedial alternatives for OU-1 soil are summarized in Table 3. Because no active remedial actions are associated with any of the remedial technologies/process options/alternatives screened and evaluated during the FS process, location-specific ARARs are not applicable.

### 6.4 Remedial Alternatives for Detailed Analysis

Based on the remedial technology screening results, the following remedial alternatives were retained for detailed analysis for the 1190 Church Road property (Section 7):



- Alternative 1 - No Action: required by the NCP.
- Alternative 2 – Revised Institutional and/or Engineering Controls.



## 7.0 DETAILED ANALYSIS OF ALTERNATIVES – 1190 CHURCH ROAD

### 7.1 Remedial Alternatives for Detailed Analysis

The following remedial alternatives were retained for detailed analysis for the 1190 Church Road property to complete the administrative record for OU #1 at the NP 7 Site (and address all outstanding USEPA comments):

- Alternative 1 - No Action: required by the NCP.
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- Alternative 2 – Revised Institutional and/or Engineering Controls.

The detailed analysis of Site-wide alternatives for the FS is based upon the nine evaluation criteria defined in 40 CFR § 300.430 (e)(9). The criteria include two “threshold criteria,” which must be satisfied for an alternative to be selected, five “balancing criteria,” which are used to evaluate the trade-offs between alternatives, and two “modifying criteria” (state acceptance and community acceptance) that are assessed during the public comment period following USEPA’s publication of a Proposed Remedial Action Plan (PRAP). The threshold and balancing criteria considered in the FS, and the modifying criteria, which will be addressed by USEPA after the FS has been completed, are described below.

#### Threshold Criteria

- Overall Protection of Human Health and the Environment: Under this criterion, an alternative is assessed to determine whether it can adequately protect human health and the environment over the short- and long-term from unacceptable risks posed by hazardous substances, pollutants or COCs, by eliminating, reducing or controlling exposures to levels established during development of PRGs.
- Compliance with ARARs: This criterion evaluates whether and how the alternative attains applicable or relevant and appropriate requirements under federal environmental laws and state environmental, facility siting laws, local/municipal code, or provides grounds for invoking the legal waiver of such requirements.

#### Balancing Criteria

- Short-Term Effectiveness: This criterion evaluates the impacts of the remedial alternative during remedy construction with respect to human health and the environment.
- Reduction of Toxicity, Mobility, and Volume through Treatment: Under this criterion, the degree to which an alternative employs recycling or treatment that reduces toxicity, mobility, or volume is assessed, including how treatment is used to address the principal threats posed at the Site. As indicated previously, no potential Principal Threat Waste or source areas exist.
- Long-Term Effectiveness and Permanence: Under this criterion, a remedial alternative is assessed for the long-term effectiveness and permanence it affords, along with the degree of uncertainty that the alternative will prove successful.
- Implementability: This criterion addresses a remedial alternative’s technical/administrative feasibility, as well as, the availability of various services and materials required.



- **Cost:** This criterion addresses the estimated capital and operation and maintenance (O&M) costs (at net present worth) for implementing a remedial alternative to the level necessary for comparison with other alternatives; typical accuracy of plus 50% and minus 30%.

### Modifying Criteria

- **State Acceptance.** This criterion, which is ongoing throughout the RI/FS process, reflects the statutory requirement to provide for substantial and meaningful state involvement.
- **Community Acceptance.** This criterion refers to the community's comments on remedial alternatives under consideration, where "community" is broadly defined to include all interested parties. These comments are taken into account throughout the FS process. However, only preliminary assessment of community acceptance can be conducted during the development of the FS, since formal public comment will not be received until after the public comment period for the preferred alternative is held.

The first seven criteria are addressed in this FFS Final Report. State acceptance will be evaluated after PADEP has reviewed and commented on this FFS Final Report. Community acceptance will be addressed in the ROD that will be finalized after the public comment period for the PRAP. State and community acceptance must be considered during remedy selection.

Due to the low number of applicable/feasible remedial alternatives, and the fact that the two remedial alternatives do not vary substantially, the detailed alternatives analysis (albeit more detailed) essentially mimics the screening analysis presented in Section 6.

## 7.2 Detailed Remedial Alternatives Analysis

This section provides more detail on each of the two remedial alternatives and documents the detailed remedial alternatives analysis:

- **Alternative 1 - No Action:** required by the NCP.
- **Alternative 2 - Revised Institutional and/or Engineering Controls.**

### 7.2.1 Alternative 1 – No Action

#### 7.2.1.1 Remedial Alternative Description

Alternative 1 constitutes the No Action alternative for OU-1 soil. Under the No Action alternative, no additional remedial measures would be implemented at the site. As required by the NCP, this alternative is considered as a baseline to which other alternatives are compared.

The only activity that would occur under Alternative 1 involve the required five-year review of site conditions. Under this alternative, no monitoring/maintenance would be performed in relation to existing institutional and engineering controls. Therefore, measures to ensure and document remedy protectiveness and/or assess potential migration of COCs, would not be performed.



During each five year review, site conditions would be assessed; changes in potential risks, and potential imminent hazards posed by COCs would be identified and corrected, as needed. Site use would also be considered.

#### 7.2.1.2 Detailed Analysis

**Overall Protection of Human Health and the Environment** - Alternative 1 would not fully protect human health and the environment. If existing institutional/engineering controls are not monitored and maintained, although the potential is limited, residential/non-residential exposures to hazardous substances could occur in isolated locations containing COCs at levels exceeding Controlling PRGs and/or are inconsistent with background. In addition, the RAOs would not be satisfied. Area residents, trespassers, and/or workers would not be fully protected from direct contact with contaminated soils in isolated locations in the absence of monitored and maintained engineering and institutional controls. Existing groundwater use restrictions would not be actively monitored.

**Compliance with ARARs** - Alternative 1 would not comply with chemical-specific ARARs as COC concentrations would continue to exceed Controlling PRGs. Action- and location-specific ARARs are not applicable as no response action would be taken.

**Long-Term Effectiveness/Permanence** – Potential threats to human health and the environment would potentially remain in association with subsurface soil in isolated areas. Alternative 1 would have limited long-term effectiveness and permanence because site COCs would remain without monitored and maintained engineering/institutional controls. Potential for ongoing unacceptable risks to human receptors (primarily construction/utility workers) would exist in relation to isolated locations. Although soil COCs might eventually decrease through natural attenuation, the process would take many years and would not be monitored. In summary, existing controls would not be monitored and maintained; therefore, evaluation of the adequacy and reliability of controls would not be applicable. Five-year reviews would be required to assess whether threats or risks are increasing or abating with time in light of future land use or changes in Site conditions.

**Reduction of Toxicity, Mobility, and Volume through Treatment** - Alternative 1 would not reduce the toxicity, mobility, or volume of contaminants through treatment because treatment would not occur. As previously noted, no potential Principal Threat Wastes or source areas (including the soil-to-groundwater pathway) remain. Some reduction of contaminant toxicity or volume might occur through attenuation processes. Alternative 1 would not satisfy the statutory preference for treatment to reduce risks posed by contaminated soils. Although COC mobility is not expected to be significant, Alternative 1 would not reduce the mobility of COCs.



**Short-Term Effectiveness** – Because no response action would occur, Alternative 1 would not pose short-term risks to the local community or workers, and there would be no additional impacts to the environment if Alternative 1 was implemented.

**Implementability** – Because no remedial actions or measures would occur, Alternative 1 would be readily implementable. The technical feasibility criteria (including constructability, operability, and reliability) are not applicable. Implementability of administrative measures is not applicable since no such measures would be taken; no permits would be required for implementation of Alternative 1. Coordination with other agencies would be required as part of the five-year review process. Regulatory personnel and environmental specialists are readily available to perform the five-year reviews effectively.

**Cost** - No capital costs are associated with the no-action alternative. Over a 30-year period, the net present worth cost for performing six five-year reviews is estimated at \$26,555 (at an annual 7 percent discount rate) (Appendix C). The average cost for five-year reviews is estimated at \$10,000 per event (or \$2,000 per year), assuming no environmental sampling. The total cost for Alternative 1 – No Action is \$26,555.

## **7.2.2 Alternative 2 – Revised Institutional and/or Engineering Controls**

### **7.2.2.1 Remedial Alternative Description**

Alternative 2 relies on deed/access restrictions, institutional controls, and engineering controls (building slabs, asphalt roadways and parking lots) to limit exposure to potential hazardous substances. This alternative includes revising the scope of existing institutional controls (deed restrictions) to cover only those isolated areas that contain COCs above Controlling PRGs and/or are inconsistent with background, based on the RI, RAs, and risk management evaluations. This alternative would include regular monitoring, maintenance and reporting in relation to *revised* engineering and institutional controls, enforcement of deed restrictions and local ordinances to prevent future uses of the property that could result in additional exposures and use of groundwater from under the Site. Long-term monitoring would be conducted to assess contaminant status and potential threats to human health and the environment. Site conditions and risks would be reviewed every five years. The soil sample locations that would be included in the engineering/institutional control areas under Alternative 2 are depicted on Figure 3.





Deed restrictions are already in place that prevent construction and/or excavation activities in areas of potential contaminated soils (Appendix B); however, the existing institutional controls do not cover several isolated sample locations that contain COC concentrations above Controlling PRGs and/or are inconsistent with background. Records of the presence, nature, and extent of soil COCs would be maintained to ensure adequate measures are being implemented to minimize exposure. Institutional Controls prevent the installation of drinking water supply wells and groundwater use, thus minimizing the potential for future exposure to contaminated groundwater in perceptivity.

An Institutional Control Implementation and Assurance Plan (ICIAP) would be developed during the remedial design (RD) to address Institutional Controls and Land Use Covenants. The ICIAP would identify parties (e.g., Federal, State, municipal authorities, or private entities) responsible for implementation, enforcement, monitoring, and long-term assurance, including costs (both short-term and long-term), and methods to fund the costs and responsibilities for each component. The ICIAP would include figures describing the coordinates of the restricted areas that do not allow for unrestricted land use. Also, the ICIAP would identify reporting requirements associated with the ICs and LUCs, and would include a periodic review of the status and effectiveness of these measures and whether the measures are still appropriate.

The revised deed restrictions presented under Alternative 2 were shared with and reviewed by various representatives of the current property owner, including their environmental consultant and legal counsel. Consistent with discussions and emails communications in January 2017, the revised deed restrictions presented in Alternative 2 are acceptable to the current property owner.

#### 7.2.2.2 Detailed Analysis

**Overall Protection of Human Health and the Environment** - Alternative 2 would protect human health and the environment through monitoring and maintenance of institutional/engineering controls to ensure that residential/non-residential exposures to COCs in isolated locations is mitigated. In general, the RAOs would be satisfied. Area residents, trespassers, and/or workers would be protected from direct contact with contaminated soils in isolated locations through application of monitored and maintained engineering and institutional controls. Existing groundwater use restrictions would be actively monitored.

**Compliance with ARARs** - Alternative 2 would not comply with chemical-specific ARARs as COC concentrations would continue to exceed Controlling PRGs. Action- or location-specific ARARs are not applicable as no response action would be taken. Alternative 3 would effectively mitigate potential exposure to COCs at levels above Controlling PRGs.

**Long-Term Effectiveness/Permanence** – Because active remediation is not involved, COCs at levels above Controlling PRGs in isolated locations would remain long-term in subsurface soil. Potential threats to human health and the environment would be mitigated through active monitoring and maintenance of



engineering controls. Alternative 2 would be effective over the long term because engineering and institutional controls covering isolated areas containing COCs at levels above Controlling PRGs would be regularly monitored and maintained. No unacceptable risks to human receptors would exist in relation to isolated locations containing COCs above Controlling PRGs. Soil COCs might eventually decrease through natural attenuation, the process would take many years. In summary, revised controls would be monitored and maintained; therefore, evaluation of the adequacy and reliability of controls would be evaluated during five-year reviews to assess whether threats or risks are increasing or abating with time in light of future land use or changes in Site conditions.

**Reduction of Toxicity, Mobility, and Volume through Treatment** - Alternative 2 would not reduce the toxicity, mobility, or volume of contaminants through treatment because treatment would not occur. As previously noted, no potential Principal Threat Wastes or source areas (including the soil-to-groundwater pathway) remain. Some reduction of contaminant toxicity or volume might occur through attenuation processes. Alternative 2 would not satisfy the statutory preference for treatment; however, previous Removal Actions (Golder, 2006) removed any potential Principal Threat Wastes and source areas. Although COC mobility is not expected to be significant, Alternative 2 would not reduce the mobility of COCs.

**Short-Term Effectiveness** – Because no response action would occur, Alternative 2 would not pose short-term risks to the local community or workers, and there would be no additional impacts to the environment if Alternative 2 was implemented.

**Implementability** – Because no remedial actions or measures would occur, Alternative 2 would be readily implementable. The technical feasibility criteria (including constructability, operability, and reliability) are not applicable. Administrative measures are implementable. The 1190 Church Road property has been redeveloped for mixed commercial and residential use and is owned by a property management company. Limiting institutional controls to only those isolated areas where COC concentrations exceed Controlling PRGs and/or are inconsistent with background is feasible. Permits may be required for implementation of Alternative 2. Coordination with other agencies would be required as part of the five-year review process. Regulatory personnel and environmental specialists are readily available to perform the five-year reviews effectively.

**Cost** – Capital costs associated with Alternative 2 (\$18,750) are related to professional services in support of establishing revised institutional controls and deed restriction negotiations with the current property owner. Over a 30-year period, the net present worth cost of capital and monitoring/maintenance/reporting costs regarding engineering and institutional controls and performing a total of six five-year reviews is estimated at \$46,472 (at an annual 7 percent discount rate) (Appendix C). The average annual cost for five-year reviews is \$10,000 per event (or \$2,000 per year), assuming no environmental sampling;



monitoring/maintenance/reporting of engineering and institutional controls estimated at \$1,500 per year. The total cost for Alternative 2 - Revised Institutional and/or Engineering Controls is \$65,222.

### **7.3 Comparative Remedial Alternatives Analysis**

A comparative analysis of the two remedial alternatives for 1190 Church Road was conducted relative to the FS evaluation criteria to identify the advantages and disadvantages of each alternative relative to each other.

#### **7.3.1 Overall Protection of Human Health and the Environment**

Alternative 1 would not fully protect human health and the environment because institutional and engineering controls would not be monitored or maintained and no reporting would occur. Alternatives 2 would protect human health and the environment through monitoring and maintenance of institutional/engineering controls to ensure that residential/non-residential exposures to COCs is mitigated. Alternative 2 would cover all areas containing COC concentrations above Controlling PRGs and/or are inconsistent with background.

Similarly, RAOs would generally be satisfied for Alternative 2 but not Alternative 1. Under Alternative 2, Area residents, trespassers, and/or workers would be protected from direct contact with contaminated soils through application of monitored and maintained engineering and institutional controls. Existing groundwater use restrictions would also be actively monitored under Alternative 2 (but not Alternative 1).

#### **7.3.2 Compliance with ARARs**

None of the alternatives would not comply with chemical-specific ARARs, as COC concentrations would continue to exceed Controlling PRGs in subsurface soils. However, Alternative 2 would effectively mitigate potential exposure to COCs at levels above Controlling PRGs. Action- or location-specific ARARs are not applicable to any of the remedial alternatives as no response action would be taken.

#### **7.3.3 Long-Term Effectiveness/Permanence**

Because active remediation is not involved, COCs at levels above Controlling PRGs in isolated locations would remain long-term in subsurface soil under all three alternatives. Potential threats to human health and the environment would be mitigated through active monitoring and maintenance of engineering controls under Alternative 2 (but not Alternative 1).

Alternative 2 would also be effective over the long term because engineering and institutional controls covering isolated areas containing COCs at levels above Controlling PRGs would be regularly monitored and maintained. No unacceptable risks to human receptors would exist in relation to isolated locations containing COCs above Controlling PRGs. Soil COCs might eventually decrease through natural attenuation, the process would take many years. In summary, controls would be monitored and maintained



under Alternative 2 (but not Alternative 1). The adequacy and reliability of controls would be evaluated during five-year reviews to assess whether threats or risks are increasing or abating with time in light of future land use or changes in site conditions under both alternatives.

#### **7.3.4 Reduction of Toxicity, Mobility, and Volume through Treatment**

None of the alternatives would actively reduce the toxicity, mobility, or volume of contaminants through treatment because treatment would not occur. As previously noted, no potential Principal Threat Wastes or source areas (including the soil-to-groundwater pathway) remain. Some reduction of contaminant toxicity or volume might occur through attenuation processes under both alternatives. None of the alternatives would satisfy the statutory preference for treatment; however, previous Removal Actions (Golder, 2006) removed any potential Principal Threat Wastes and source areas. Although COC mobility is not expected to be significant, none of the alternatives would reduce the mobility of COCs.

#### **7.3.5 Short-Term Effectiveness**

Because no response action would occur, none of the alternatives would pose short-term risks to the local community or workers, and there would be no additional impacts to the environment associated with any of the alternatives.

#### **7.3.6 Implementability**

Because no remedial actions or measures would occur, any of the remedial alternatives would be readily implementable. The technical feasibility criteria (including constructability, operability, and reliability) are not applicable. Administrative measures are implementable under Alternative 2. Permits may be required for implementation of Alternative 2. Coordination with other agencies would be required as part of the five-year review process under any of the alternatives. Regulatory personnel and environmental specialists are readily available to perform the five-year reviews effectively.

#### **7.3.7 Cost**

Capital costs associated with Alternative 2 are related to professional services in support of establishing revised institutional controls limited to the isolated locations containing COCs above Controlling PRGs. The capital costs for Alternative 2 are estimated at \$18,750. No capital costs (\$0) are associated with Alternative 1, as no submittals will be required until the five-year review.

Over a 30-year period, the net present worth cost of monitoring/maintenance/reporting regarding engineering and institutional controls (Alternative 2) and performing a total of six five-year reviews (Alternative 1 and 2) is estimated at \$26,555 and \$46,472, respectively (at an annual 7 percent discount rate) (Appendix C). The average annual cost for five-year reviews is \$10,000 per event (or \$2,000 per year), assuming no environmental sampling; monitoring/maintenance of engineering controls are estimated



to be \$1,500 per year (Alternative 2). The following table summarizes the estimated costs for the two alternatives.

| <b>Alternatives</b>              | <b>Alternative 1 –<br/>No Action</b> | <b>Alternative 2 –<br/>Revised ICs</b> |
|----------------------------------|--------------------------------------|--|
| <i>Capital Costs</i>             | <i>\$0</i>                           | <i>\$18,750</i>                        |
| <i>O&amp;M Costs</i>             | <i>\$26,555</i>                      | <i>\$46,472</i>                        |
| 5-yr Reviews                     | \$2k per year/\$10k<br>total         | \$2k per year/\$10k<br>total           |
| Monitoring/Maintenance of<br>ICs | \$0                                  | \$1.5K per year                        |
| Discount Rate                    | 7%                                   | 7%                                     |
| <b>Total Costs</b>               | <b>\$26,555</b>                      | <b>\$65,222</b>                        |



## 8.0 CONCLUSIONS

Pursuant to the AOC (Document No. 111-2000-0018-DC), the Respondents completed all remaining FS components, including all FS TM#2 elements; the screening and detailed remedial alternatives analysis; and preparation of the FFS Final Report for OU-1 at the NP7 Superfund Site in Montgomery County, PA.

Based on the FS TM#2 results, no further revaluation of GRAs or remedial alternatives was warranted for OU-1 soil at any of the three Respondent's properties.

Notwithstanding these results, a limited number of soil sampling locations at the 1190 Church Road property were determined to contain at least one COC at concentrations above Controlling PRGs and/or not consistent with background. All of the soil sampling locations that contain COCs exceeding one or more Controlling PRGs are situated at depth greater than 2 feet bgs, and are located beneath existing engineering controls and/or within the bounds of existing engineering controls. As a result, the development of RAOs (other than those in support of future property stewardship) is not warranted for protection of human health, ecological, and soil-to-groundwater pathways with respect to the 1190 Church Road property.

To comply with recent EPA comments outlined previously in this report, screening and detailed remedial alternatives analysis was performed for the No Action alternative (as required by the NCP) and alternatives consisting of engineering/institutional controls only for the 1190 Church Road Property. Although this step is not strictly required per the risk management evaluations, to complete the administrative record for the NP7 Site, identification, screening, and detailed evaluation of a limited number of remedial alternatives was performed. Specially, the following alternatives were evaluated:

- Alternative #1 – No Action.
- Alternative #2 – Revised Institutional and Engineering Controls.

Based on the individual and comparative analysis of the two remedial alternatives for the 1190 Church Road Property, the following conclusions were reached:

- Revised RAOs – Alternative 1 would not achieve revised RAOs; RAOs would be generally satisfied under Alternative 2.
- Protection of Human Health and Environment – Alternative 1 would not protect human health and environment; Alternative 2 would be generally protective.
- Compliance with ARARs – none of the alternatives would comply with chemical-specific ARARs.
- Long-Term Effectiveness/Performance – Alternative 1 would not be permanent; Alternative 2 would be permanent and therefore effective over the long term.
- Reduction of Toxicity, Mobility, and Volume through Treatment – none of the alternatives would comply because treatment would not occur.



- Short-Term Effectiveness – Because no responsive actions would occur, none of the alternatives would pose short-term risks.
- Implementability – Because no remedial actions would occur, all three alternatives would be readily implementable.
- Cost – Alternative 1 is the lowest cost alternative. Alternative 2 provides greater protection of human health and the environment at an overall greater cost.

The revised deed restrictions presented under Alternative 2 were shared with and reviewed by various representatives of the current property owner, including their environmental consultant and legal counsel. Consistent with discussions and emails communications in January 2017, the revised deed restrictions presented in Alternative 2 are acceptable to the current property owner.

As indicated in their June 22, 2017 letter, the USEPA approved the draft FFS Report (February 2017), assuming that the responses in Golder's May 3, 2017 letter were incorporated into the text of the final FS Report. As indicated in Section 1, this FFS Final Report incorporates Golder's May 3, 2017 letter responding to USEPA's April 6, 2017 comments. Accordingly, this FFS Final Report represents the fully approved text. The Respondent for 1190 Church Road also agrees to address minor USEPA comments outlined in an enclosure to the USEPA's June 22, 2017 FS approval letter (Appendix D) during the planned Remedial Design process.